Community News

Cooperation key to success of new shuttle training facility

Shuttle mission simulator instructors are now working in a new facility that took about a year to design, develop and implement thanks to a team of JSC employees willing to try new ways of doing business.

The Shuttle Mission Training Facility instruction stations, completed in December, were designed using "rapid prototyping" and feature state-of-the-art hardware and software that any instructor familiar with the old system can learn in a short two-hour overview.

"The significant driver in making this project a success was to involve all customers and developers in the development of an initial set of requirements," said Jeff Fox, NASA lead for the Shuttle Mission Simulator Instructor Station Upgrade. "The project was a success because of routine meetings with all customers and developers, each of whom had the opportunity to review all facets of the project and decide on the best course of action to follow on a weekly basis."

Fox said the teamwork enabled the workers to spend less time on formal paperwork and more time building and testing. An environment of trust between civil service, United Space Alliance and Hughes employees was created whereby every decision on a lower level did not have to go through the project lead or a weekly meeting before action could be taken.

The team worked together from inception through project completion. As displays were first generated, users looked at them and provided instant feedback to the software engineers. Many comments were incorporated on the spot. Details that made the system more user-friendly were added as the system developed and users became more familiar with the new workstation environment. By the time the system was ready to be tested, many of the problems that would have shown up as test failures or as undesirable features had already been corrected.

"We started using a 'build a little, test a little' type of concept very early on in the project. We chose to document how the system really would work instead of trying to perfect the paper requirements a year in advance," Fox said.

When the project was complete, the result was a user-friendly, high-quality product because users were included in every step of implementation. Instructors were prepared to conduct training in the new environment from day one of operations.

The new stations replace 20-year-old technology and provide more flexibility for instructors. The upgrade utilizes state-of-the-art technology based on a UNIX platform that provides a workstation user interface to the simulators. The stations are used to conduct simulations in the motion and fixed base simulators in Bldg. 5 and the guidance and navigation simulator, identical to the fixed based, in Bldg. 35. Instructors input "malfunctions" so astronauts and flight controllers can be ready for any unusual aspects of a mission.

"Management's confidence in the personnel involved allowed the new stations to be used several times for simulation support before the official release date," Fox said. "The teamwork and rapid prototyping approach resulted in an intangible estimate of 130 percent of product delivered for every dollar spent. A good return on our money. It was probably due to about 30 percent good process and 70 percent outstanding people."

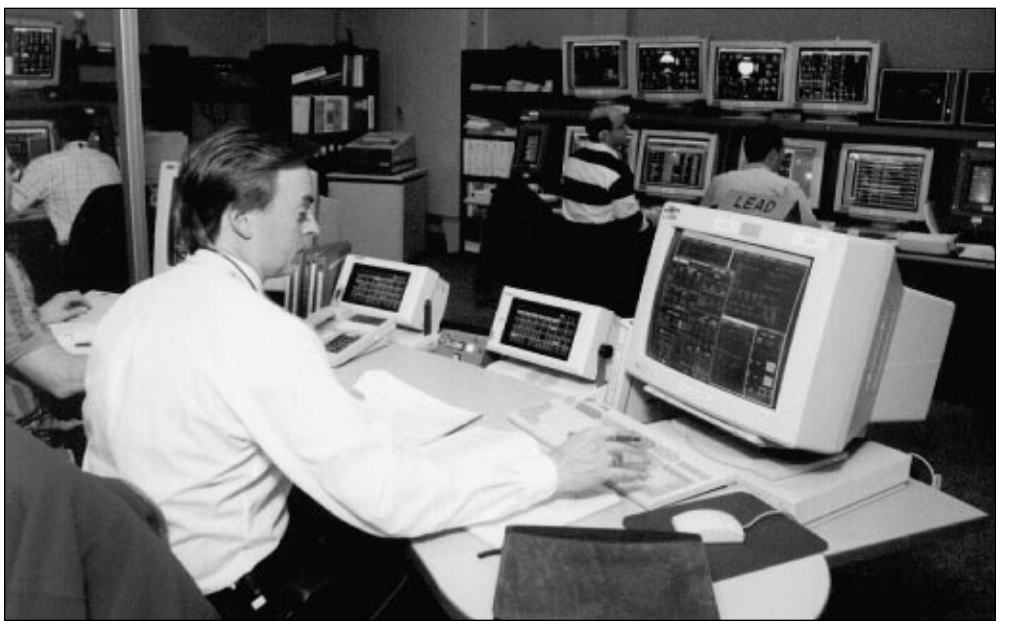

Photo courtesy of United Space Alliance

Shuttle mission simulator instructor Tim Terry is now working in a new facility that took about a year to design, develop and implement thanks to a team of JSC employees willing to try new ways of doing business.

More than 100 employees contributed to the upgrade making the project a success. Some of the major contributors were:

NASA: Jeff Fox, Frank Hughes and Ray Dell'Osso.

Hughes Training Inc.: Jack Thrift, Richard Gaskin, Jim Lodden, Ron Aadsen, Keith Hurley, Mary Matuszko, Darrel Gaines, Jerol Bowie and Alberto Barrera.

USA Project Engineering and Management: John Waters, Mary Ferris, Kathy Rogers, Mike Vaughn and Zack Crow.

USA Hardware Engineering: Robert Orahood, Bill Ramsey and Craig Wittig.

USA Software Engineering Integration and Testing: Harold Brown, Willie Albores, Petr Polak, Chet Conrad and Thuy Mai.

USA/NASA Training: Mike Sterling, Dan Bailey, Walter Barnett, Tandra Gill, Joaquin Andujo, Rodney Harberson, Jon Kennard, Tim Terry, Juan Garriga, Mike Jensen, Melanie Miller and Ginger Deans.

USA Maintenance and Operations: Denis Charpentier, Tom Crofton, Dan Durmas, Carl Edmonson, Richard Eick, Gary Gonzales, David Lyssy, Patricia Portilla, Steve Rowlands, Larry Stachey, Jim Svehla, Scott Turner, Joe Knight, Cynthia Jackson and Joe Vlaming.

JSC Photos S97-04915, S97-04912 by Steve Candler

RUSSIAN FESTIVAL—Dignitaries kick off the second annual Russian Festival April 11 at Space Center Houston. Top: Texas Sen. J. E. "Buster" Brown, R-Lake Jackson, center, presents the Texas Congressional proclamation naming April 12 as Space Explorers Day to Phase 1 Program Office Manager Frank Culbertson, left, and Russian Cosmonaut Vladimir Titov, right. Culbertson and Titov were honorary co-chairs of the festival. Right: the Russian Folk band, Caravan, performs at Space Center Houston.

New exhibit opening at SCH

Space Center Houston is hosting the world premiere of Robot Zoo, the highlight of the center's summer attraction.

The exhibit, scheduled to be unveiled May 24, mechanizes ordinary animals into extraordinary robot creatures, revealing nature's magic as master-planned machinery. Through entertaining, educational and interactive 3-D adventure stations, SCH guests can look at the marvel of nature through the genius of engineering.

Larger-than-life animated robots include a 9-foot-long chameleon, a 9-foot-long rhinoceros, a 6-foot giant squid with 18-foot tentacles and a 9-foot-long platypus. Also featured are a 6-foot-long house fly with a 10-foot wingspan, a 9-foot-long grasshopper, a 6-foot bat and a giraffe whose head and neck alone stretch 9 feet tall.

Interactive displays, in the 5,000 square foot exhibit, offer hands-on exploration of scientific concepts. Computer displays allow visitors to try out cutting-edge technology developed for scientific applications such as aerospace and automotive design, oil and gas exploration and weather forecasting.

Some of the interactive highlights include:

Sticky Feet—Using hand and knee pads, guests can try to stick like flies to a sloping surface;

Mister Platypus—Children can build a platypus or their own creature by adding different animal parts to the model of a platypus' body;

Squid Propulsion Simulation—Would-be engineers use computational fluid dynamics to manipulate nerves and muscles that control the flow of water a squid expels to jet away;

Tongue Gun—A shooting gallery from the animal kingdom where a chameleon takes aim at spinning dragonfly targets;

Keep an Eye on You—The robot model of a chameleon's head shows how the reptile views the world; and

Hide and Seek—Small children can explore the concept of camouflage by selecting a patterned coat and standing in front of a patterned wall and watch themselves appear and disappear on a video monitor.

For more information call SCH at 244-2105.

JSC Safety Alert

Potential Electrical Shock Hazard Involving Exterior Street and Parking Lot Light Poles

What happened

Several exterior street and parking lot light poles at JSC were found to have defective electrical grounds that could result in electric shock hazard if the pole is touched.

Outcome of the Investigation

Randomly sampled exterior street and parking lot light poles were tested and found to have defective grounds. This is primarily a result of the following components:

- The design of the power distribution circuit, which lacks an equipment grounding conductor. This original installation met the National Electric Code at the time of installation.
- The breakdown in the connections to the supplemental ground rod. Under certain fault conditions, the Earth will act as the sole equipment grounding conductor.
- The unlikely combination of a defective grounding condition and a fault can lead to potentially lethal electrical shocks if certain conditions occur that allow the pole to become energized. These poles are energized primarily at night but can be remotely energized for testing and repair during daylight hours.

What You Can Do

All personnel should understand the full potential intended by this message:
Do not touch street or parking lot light poles.

What is Being Done

Interim measures are being implemented immediately. New ground rods are being installed on each light pole on-site (approximately 900). A temporary means of insulating the base of each pole is being examined. A preliminary report to make recommendations for permanent repair or replacement of the existing exterior lighting system for JSC has been initiated.